



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,878	01/17/2002	Shijian Zhou	GP-300898	5565

7590 04/23/2003

CHRISTOPHER DEVRIES  
General Motors Corporation  
Legal Staff, Mail Code 482-C23-B21  
P.O. Box 300  
Detroit, MI 48265-3000

EXAMINER

NGUYEN, HANH N

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/047,878

Applicant(s)

ZHOU ET AL.

Examiner

Nguyen N Hanh

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because the opening of passage way 38 as in Fig. 1 does not have reference number. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4,9,10-12,17 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (JP 09-154258)

Regarding claim 1, Yamamoto discloses an electric motor comprising: a stator (10 in Fig. 1) for producing a magnetic field, a rotor (6) rotated by said magnetic field; a motor shaft (7) coupled to said rotor; wherein said motor shaft includes an interior surface that is cone shaped to conduct a liquid coolant through said interior surface to cool the electric motor.

Regarding claim 2, Yamamoto also discloses an electric motor wherein said stator includes current-carrying coils (Fig. 1) to generate said magnetic field.

Regarding claims 3 and 10, Yamamoto also discloses an electric motor wherein said rotor is a squirrel cage rotor.

Regarding claims 4 and 11, Yamamoto also shows the rotor includes permanent magnets (Fig. 1)

Regarding claim 9, Yamamoto also discloses an electric motor comprising: a wound stator (10 in Fig. 1), said wound stator conducting current to generate a magnetic field; a rotor (6) rotated by said magnetic field; a motor shaft (7) coupled to said rotor, said motor shaft including a cone-shaped interior surface having an entrance opening (4) and an exit opening (9a and 9b); and a liquid coolant propelled by centrifugal force generated by the rotation of said rotor through said cone-shaped interior surface, said liquid coolant cooling the electric motor (abstract).

Regarding claim 12, Yamamoto also disclose an electric motor wherein said liquid coolant is oil (abstract).

Regarding claim 17, it is noted that all limitations of the method claim have been fulfilled by Yamamoto as in claim 9.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5,6,13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Rudolf ( Auslegeschrift 1 050 889).

Regarding claims 5 and 13, Yamamoto shows all limitations of the claimed invention except showing the electric motor further including a first set of passageways through said rotor to conduct a liquid coolant.

However, Rudolf discloses the electric motor further including a first set of passageways through the rotor to conduct a liquid coolant (Fig. 1) for the purpose of cooling off the motor.

Since Yamamoto and Rudolf are in the same field of endeavor, the purpose disclosed by Rudolf would have been recognized in the pertinent art of Rudolf.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Rudolf by using a set of passageways through the rotor to conduct a liquid coolant as taught by Rudolf for the purpose of cooling off the motor.

Regarding claim 6 and 14, Rudolf also discloses a rotor wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter

5. Claims 7,8,15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Grennan et al.

Regarding claims 7 and 15, Yamamoto shows all limitations of the claimed invention except showing the electric motor further including a second set of passageways between said rotor and said motor shaft.

However, Grennan et al. disclose the electric motor further including a second set of passageways between said rotor (20 in Fig. 1) and said motor shaft (32 in Fig. 1 and Col. 4, lines 1-35) for the purpose of cooling off the motor.

Since Yamamoto and Greenan et al. are in the same field of endeavor, the purpose disclosed by Grennan et al. would have been recognized in the pertinent art of Yamamoto.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Yamamoto by using a set of passageways between said rotor and said motor shaft as taught by Grennan et al. for the purpose of cooling off the motor.

Regarding claims 8 and 16, the structure disclosed by Yamamoto, modified by Grennan et al. would have second set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter (because of the conical shape of the shaft).

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703) 305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers

Application/Control Number: 10/047,878

Page 6

Art Unit: 2834

for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HNN

April 18, 2003

A handwritten signature in cursive script, appearing to read 'Dang Le', with a stylized flourish at the end.

DANG LE  
PRIMARY EXAMINER